REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Rejection Under 35 USC §112, 1st Paragraph

This rejection has been addressed by amending claim 1 to delete the reference to "non-permanent" magnetic material, and to clarify that the central circular portion is part of the rotor, and includes the inner periphery of the noncircular core. The specification has also been amended to delete the term "non-permanent."

It is noted that a resolver of the type claimed cannot possibly be made of a permanent magnet or it would be inoperative. Instead, those skilled in the art would understand that the material could be either permanent or non-permanent.

2. Rejection of Claims 1-5 Under 35 USC §103(a) in view of European Patent Publication No. EP 1 321 744 (Tsukada) and U.S. Patent No. 2,805,677 (Baird)

This rejection is respectfully traversed on the grounds that the Tsukada publication and the Baird patent fail to disclose or suggest, whether considered individually or in any reasonable combination, a variable reluctance resolver

- in which each salient pole of the rotor has a center that is offset by a prescribed offset distance (A) in the radial direction from the center of the rotor,
- in which a surface of the pole has a radius (r) relative to the offset center, and
- in which the shape of the rotor is defined such that the permeance varies according to a sine function of the rotational angle, the offset distance, and the radius,

as recited in claim 1. The Tsukada publication and Baird patent also fail to disclose or suggest the specific rotor shape recited in claim 2 or gap recited in claim 3.

While it might be possible that the rotor illustrated in Fig. 6 of the Tsukada publication includes an offset center and predetermined radius, there is no written description to that effect,

and therefore no disclosure or teaching. Furthermore, Tsukada clearly does not disclose that the permeance of the gap is arranged to vary according to a sine function of the rotational angle, the offset distance, and the radius. The drawing by itself does not constitute a disclosure since it is impossible to determine from the drawing whether the poles in fact have a radius r, centers offset by A from the actual center of the rotor, and the claimed gap permeance.

This deficiency is not remedied by the Baird patent, which also does not disclose or suggest the relationship between the permeance of the gap, a sine function, the offset distance, and the radius recited in claim 1, much less the relationship even more specifically recited in claim 2. With respect to claim 2, it is respectfully noted that while it might be obvious to optimize variables, the claimed invention does not merely optimize variables, but rather optimizes variables (A and r) that the prior art does not even consider.

In this regard, the citation by the Examiner of *In re Boesch* is particular inapposite since the *Boesch* case involved a chemical composition with known constituents, and the *Boesch* court merely held that the Appellant had failed to prove unexpected results for a particular constituent percentage. In *Boesch*, all elements of the invention were known, and the invention consisted solely of optimizes percentages of the known constituents. Even then, the court stated that the *prima facie* case of obviousness could be overcome by a showing of unexpected results. In the present case, the invention does not merely involve optimizing percentages of known constituents, but rather involves variables that are not at all disclosed or considered by the prior art. In other words, unlike the situation in *Boesch*, the claimed invention does not merely optimize variables, but rather optimizes variables (sine function, A, and r) that the prior art completely failed to even consider.

It is clear that the relationship between A, r, the sine function, and the gap is different in Tsukada and Baird. This difference would, at best, have suggested to the ordinary artisan that there is no preferred relationship between A, r, and the permeance of the gap. It would certainly not have led to the claimed relationship, as broadly recited in claim 1, or to the more specific

relationships recited in claims 2 and 3. As a result, withdrawal of the rejection of claims 1-5 under 35 USC §103(a) in view of the Tsukada publication and Baird patent is respectfully requested.

3. Rejection of Claims 1-5 Under 35 USC §103(a) in view of U.S. Patent Nos. 6,891,365 (Nakano) and 5,300,884 (Maestre)

This rejection is respectfully traversed on the grounds that neither the Nakano patent nor the Maestre patent, whether considered individually or in any reasonable combination, discloses or suggests a variable reluctance resolver in which each salient pole of the rotor has a center that is offset by a prescribed offset distance (A) in the radial direction from the center of the rotor, in which a surface of the pole has a radius r relative to the offset center, and in which the shape of the gap is defined such that the permeance varies according to a sine function of the rotational angle, the offset distance, and the radius, as recited in claim 1, much less the specific relationships recited in claims 2 and 3, or the pole structure recited in claims 4 and 5.

As with the Tsukada publication and Baird patent discussed above, Nakano and Maestre are silent as to the relationship between the offset A of the pole centers, radius r, the sine function of the rotor surface, and the gap permeance. In fact, neither reference suggests that there is a relationship, or that the relationship should be taken into account in designing the rotor. To the contrary, the rotor of Nakano has an elliptical shape, which means that r varies, and there is no predetermined offset. Therefore it is likely that Nakano's rotor does not include the claimed offset or radius, and therefore Nakano could not possibly have suggested the claimed relationship between offset, radius, since function, and gap. Since Maestre is silent as to the relationship, if any, Maestre could not have suggested modification of the rotor of Nakano to exhibit such a relationship, and therefore withdrawal of the rejection of claims 1-5 under 35 USC §103(a) in view of the Nakano and Maestre patents is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, expedited passage of the application to issue is requested.

Respectfully submitted,

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Date: September 21, 2005

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